ABSTRACT

A power system (8) is provided for economically supplying uninterrupted electrical power to one or more critical loads (14). One or more fuel cell power plants (18) provide one substantially continuous source of power, and a utility grid (10) provides another source of power. The fuel cell power plants (18) are [adopted to be, and are,] normally substantially continuously connected and providing power to, the critical load (s) (14). A rapidly-acting static switch (19) selectively [connects and] disconnect and reconnects the grid power supply (10) to the critical loads (s) (14) and with the fuel cell power plant (s) (18) for abnormal and normal grid operation, respectively. A switch controller (49,45) controls the state of the static switch (19) to [connect the grid power source (10) with the critical loads and the] rapidly (less than 4 ms) make the disconnections and the reconnections. The fuel cell power plants (18) [during normal operation of the grid (10), and to rapidly (less than 4 ms) disconnect the grid power source (10) from the load(s) (14) and the fuel cell power plant (s) (18) when operation of the grid (10) deviates from normal beyond a limit.] each include power conditioning systems (PCS) indirectly controlled by the switch controller (49,45) to in turn rapidly transition the (PCSs) of the fuel cell power plants (18) between grid connected and grid independent modes.